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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/553,374	04/20/2000	Edward S. Ellis	GJH-0019	5094

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EXXONMOBIL RESEARCH AND ENGINEERING COMPANY
P.O. BOX 900
ANNADALE, NJ 08801-0900

EXAMINER

JOHNSON, JERRY D

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 12/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/553,374

Applicant(s)

ELLIS ET AL.

Examiner

Jerry D. Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-23,25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-23,25 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-7, 10-15, 18-23 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison et al. in view of Cherpeck.

Harrison et al., U.S. Patent 5,292,428, teach a process wherein hydrocarbon feedstock is passed through two or more hydrodesulfurization zones and connected in a series each containing a packed bed of solid catalyst. The liquid is passed from the first zone to the next until the final zone. Make up hydrogen is supplied to a hydrodesulfurization zone (i) other than the first hydrodesulfurization zone; hydrogen-containing gas is recovered from each hydrodesulfurization zone. The first hydrodesulfurization zone is supplied with hydrogen-containing gas recovered from a subsequent hydrodesulfurization zone (abstract). If the feedstock is, for example a diesel feedstock then the reaction conditions used in the process will typically be chosen to reduce the residual sulphur content to about 0.5 wt % S or less, e.g. about 0.3 wt % S or less, even down to about 0.05 wt % S or less and to reduce the aromatics content to about 27 volume % or lower, e.g. to about 20 volume % or less (column 9, lines 35-41). There will be used an amount of hydrogen which is equivalent to at least the stoichiometric amount of hydrogen required to desulphurise the feedstock and to achieve the desired degree of dearomatisation. Normally it will be preferred to use at least about 1.05 times such stoichiometric amount of hydrogen (column 10, lines 3-9). The process can be carried out in a plant having two hydrodesulphurisation zones or in one having more than two such zones, for example 3, 4, 5, or more (column 10, lines 22-25). Depending on the nature of the feedstock and the temperature profile through the reaction stages of the plant and upon the relative volumetric

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flows of liquid and gas, the degree of desulphurisation in the latter stages of the reaction and the H₂S level may allow for a subsequent stage or stages to be added, operating at essentially the same pressure as the rest of the hydrodesulphurisation plant, but aimed at aromatics saturation.

In this case the fresh hydrogen-containing gas is fed to the aromatics hydrogenation stage or stages and then to the rest of the hydrodesulphurisation plant (column 15, lines 31-41). Different hydrodesulphurisation conditions may be used in different zones (column 10, lines 26-65). In column 18 of Harrison et al., Tables 1-3, heavy gas vacuum oil feedstock having 2.23 weight % sulphur content is converted to a product having 31 ppm S and 15.9 vol % aromatics. While Harrison et al. teach processing hydrocarbon fractions derived from crude oil, such as gasoline fractions, diesel fuel, gas oils and the like (column 2, lines 18-21), Harrison et al. differ from the instant claims in not disclosing the addition of functional additives to the processed feedstock.

Cherpeck, U.S. Patent 5,516,342, teaches that it is well known that automobile engines tend to form deposits on the surface of engine components and that fuel detergents or “deposit control” additives to prevent or control such deposits and known in the art (column 1, lines 14-26).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a detergent or deposit control additive to the processed feedstock of Harrison et al. in order to inhibit the formation of deposits in an automotive engine operated on said feedstock.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison et al. in view of Cherpeck as applied to claims 1-7, 9-15, 18-23 and 25-26 above, and further in view of Haun et al.

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Harrison et al. is relied on as above but differ from the instant claims in not teaching a countercurrent aromatics hydrogenation stage or stripping of the liquid stage prior to the aromatics stage.

Haun et al., U.S. Patent 5,114,562, is relied on as teaching countercurrent aromatics hydrogenation and stripping of the liquid stage prior to the aromatics stage, i.e, Haun et al. teach a mineral oil conversion process which includes hydrodesulfurization and hydrogenation steps performed in separate reaction zones. The subject invention specifically relates to the hydrogenation of distillate petroleum fractions to produce low sulfur content products including diesel fuel and jet fuel (column 1, lines 7-13). The feedstock could include virtually any middle distillate (column 4, lines 5-6). Desulfurization conditions employed are those customarily employed in the art for desulfurization of equivalent feedstocks (column 4, lines 29-31). The effluent stream of the desulfurization zone is stripped with a stream of hydrogen-rich gas prior to being fed to the hydrogenation zone (column 6, lines 36-47). The vapor phase portion of the reaction zone effluent stream is partial condensed and the hydrocarbon fraction is preferably passed into the hydrodesulfurization zone to ensure its complete desulfurization (column 6, line 60 to column 7, line 16). The vapor phase stream from the hydrogenation step is highly rich in hydrogen and relatively low is hydrogen sulfide and is "cascaded" to the hydrodesulfurization zone (column 8, lines 3-15). Hydrogen-rich gas may flow countercurrent to the liquid-phase hydrocarbons through one or more reaction zones (column 8, lines 26-33).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 improperly depends from canceled claim 24.

Applicant's arguments with respect to claims 1-7, 9-23 and 25-26 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

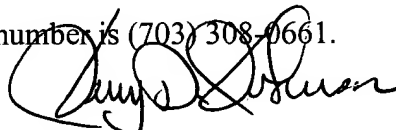
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry D. Johnson whose telephone number is (703) 308-2515. The examiner can normally be reached on 6:00-3:30, M-F, alternate Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Caldarola can be reached on (703) 308-6824. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-5408.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read "Jerry D. Johnson", is written over the end of the previous paragraph.

Jerry D. Johnson
Primary Examiner
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JDJ